

## Interrelation of adipokines with functional state of kidneys in patients with metabolic syndrome

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### Abstract

© 2016 Shulkina et al. The aim of this study was to evaluate the effect of adipokines on the formation of kidney disease in patients with obesity and hypertension. The survey included 87 patients with hypertension (stage 1-2): with obesity ( $n = 67$ ), without obesity ( $n = 20$ ). In control group, there were 25 obese patients without hypertension and metabolic changes and 30 healthy persons (mean age  $48.2 \pm 2.4$  years). We investigated the relationship between leptin, resistin, and integral indices of renal damage (glomerular filtration rate [GFR], microalbuminuria [MAU], vascular endothelial growth factor [VEGF]). In obese patients without clinical signs of renal disease, a decrease in GFR was detected in 44.7% of respondents. Levels of leptin and resistin, markers of renal damage (MAU, VEGF), were significantly higher in the group of obesity. Correlation analysis showed the existence of a high degree of direct connection between the level of adipokines and HOMA index, triglycerides (TG), MAU, VEGF in the urine, and a negative correlation with GFR. There was a direct positive relationship between the level of MAU and VEGF in the urine with levels of blood pressure, uric acid, and a negative one with GFR. Levels of MAU and VEGF in urine can be considered as early markers of renal dysfunction in obese patients. The decrease in GFR in patients with obesity was associated with increased levels of leptin and resistin. So, in patients with MS and hypertension, reduction of GFR is linked with the increase in leptin and resistin that is accompanied with the increase of VEGF in urine and MAU. In non-obese patients with hypertension obesity and MS, the increase of VEGF in urine is detected earlier than increase of MAU and reduction of GFR.

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### Keywords

Adipokine, Hypertension, Obesity, Renal disease